Maine Department of Transportation
Approved Products List Prequalification Criteria

Rapid Set Patching Material for Portland Cement Concrete

Sections: 508 – Membrane Waterproofing, 518 – Structural Concrete Repair, & 535 – Precast, Prestressed Concrete Superstructure

Specification

Material shall be non-shrink, non-metallic, contain no chlorides, and be non-reactive with any waterproofing membrane system.

Effective July 1, 2006, only products whose test results have been published by the National Transportation Product Evaluation Program (NTPEP) will be considered for inclusion on the Prequalified List. All manufacturers are urged to submit their products to the NTPEP for evaluation. NTPEP has introduced partial electronic application for its Rapid Set Concrete Patching Materials program and will accept applications on a rolling basis with pre-established deadline for submitting to the yearly testing cycle. Applications may be submitted anytime, for NTPEP consideration in the next available testing cycle. Deadline for application is June 10th of each year. It is the manufacturer's responsibility to submit application to AASHTO/NTPEP, this initiating the product evaluation process. Please contact NTPEP at the following address for more information:

AASHTO / NTPEP
NTPEP Project Engineer
444 North Capitol Street, NW, Suite 249
Washington, DC 20001
Website: www.ntpep.org

It should be noted that the NTPEP program provides for uniformity and equivalence testing to allow for periodic re-certification of products previously evaluated by NTPEP. After initial NTPEP testing, products listed on the APL should be submitted to NTPEP for re-certification every five years. Failure to do so may precipitate a product's removal from the APL.

The Department will review submitted information to assure conformance with the material requirements shown in Table 1. Following a review of submitted information, the Department may request a sample of the product for testing in the Department's laboratory or for trial use in the field.

Required Submissions

1. Completed Preliminary Information for Product Evaluation Form.
2. Applicable MSDS information
3. Any other pertinent literature such as material data sheets and letters of acceptance from other Departments.

Qualification Criteria

Whenever possible, the minimum 7 day compressive strength of the patching material should be equal to or greater than the compressive strength of the substrate, if known. Consult the latest NTPEP Report for 7 day strengths of patching material if in doubt. Check with manufacturers for information on extending materials with aggregate.

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All patching material shall be non-reactive with all primers, bridge deck waterproofing membranes, and thin lift polymer overlay systems. All patching materials shall cure for a 72 hour period prior to application or longer if required by manufacturer (see section 508.04). Manufacturers shall notify the Department at the time of product submission if longer cure times (than 72 hours) are required.

Required Testing

These are the standard tests which shall be used to evaluate Rapid Setting Patching Materials for Portland Cement Concrete. The amount of water to be used shall be the maximum allowed as designated on the manufacturers' shipping container.

1. The test for time of set will be made in accordance with ASTM C 266.
2. Compressive strength tests shall be made at 3 hours, 1 day, and 7 days in accordance with ASTM C 39, using 4 inch x 8 inch cylinders.
3. Bond strength shall be measured by slant shear in accordance with ASTM C 928 for water-based systems and ASTM C 882 for non water-based systems.
4. Two Freeze thaw tests shall be in accordance with ASTM C 666; Procedure B, and Procedure B with salt water.
5. Coefficient of Thermal Expansion and Shrinkage shall be measured in accordance with ASTM C 531 with the following modifications: “Measure at 1 day, 3 days, 7 days, and 11 days. The samples are stored at 73°F for the first 7 days, then placed in oven at 210°F for 3 more days, then let cool a minimum of 16 hours at 73°F”.

Table 1 –Testing Requirements

Initial Set Time (min.)	3 hour compressive strength (psi)	1 day compressive strength (psi)	7 day compressive strength (psi)	Bond Strength by Slant Shear 1 Day (psi)	Bond Strength by Slant Shear 7 Day (psi)	Expansion @ 300 Cycles (%) or at Termination	Durability Factor @ Termination, M=300 Cycles	Linear Shrinkage 3 days (%)	Coefficient of Thermal Expansion (in/in/°F)
≤ 30	2000	3000	4000	1000	1500	≤ 0.10	≥ 90.0%	≤ 0.10	(4 to 8) x 10^{-6}

The Department continues to evaluate its qualification criteria as well as products that have been qualified against them, and reserves the right to revise the criteria and/or withdraw product qualification at any time for any reason without notice.

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